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COLORED GEMS.

THE earliest mention of precious stones occurs in the Bible, and the twelve gems named in the twenty-eighth chapter of Exodus, as adorning the breastplate of the Jewish High Priest, are still classed among the most rare and beautiful. This fact is of value to the student of history, for it shows him that only extended research, prompted by a certain discriminating and refined taste, could have secured such treasures for the Jews. It is worthy of note, that the diamond finds a place in this list — a gem the beauty of which is largely dependent upon the skill of the lapidary in removing its rough coating, and in so adjusting and polishing its planes and angles as to secure, with the least loss in size, the greatest concentration and refraction of the rays of light. May we not, therefore, include this art among the "lost arts," for the restoration of which the world is indebted to Louis von Berghem; who, in the year 1456, succeeded in cutting and polishing diamonds by means of their own dust?

When any mineral substance is submitted to a mere physical examination, it is with a view of determining its relative hardness, lustre, and color; the term hardness, when applied to a precious stone, signifying the amount of resistance it may offer when any attempt is made to scratch or abrade it. Through the assistance of a carefully arranged collection of ten minerals, beginning with the Diamond and ending with Talc, all intervening grades may be determined. Thus a stone which can be scratched by the diamond, but resists the emerald, would be classed on the scale of hardness with the sapphire.

The lustre of a gem is that peculiar brilliancy inherent in it — the nature and purity of which is dependent upon the power which the stone possesses of absorbing or reflecting light. Thus a gem is said to have an adamantine lustre when it possesses the pure brilliancy of the diamond; a resinous lustre, when its surface has the appearance of being coated with oil, like the surface of resin; while a pearly lustre is similar to the uncertain and varied light reflected from the surface of the pearl.

The color of a precious stone being often due to the presence, in minute quantity, of some foreign mineral substance, is, therefore, to the mineralogist, a less decisive test of quality than either its lustre or hardness; yet upon its color its commercial value and name often depend. Thus a red Sapphire is called a Ruby, while a gem of equal hardness and similar lustre, of yellow color, becomes, for this reason only, a Topaz. The value of the topaz, owing to the all-powerful ruling of fashion, has, of late years, greatly decreased, while that of the ruby ranks next to the diamond, although the difference of a few shades in its color is sufficient to condemn it in the eyes of the connoisseur. The rubies most valued are those which are said to be of the color of pigeon's blood; a clear though decided red, unmixed with blue or yellow. Large and coarsely colored stones rank as Carbuncles. The rarity and intrinsic beauty of the ruby cause it to be highly prized. The Emperor Rudolph II. is said to have possessed one the size of a small hen's egg, which he valued at $150,000.

Like the diamond, which they so nearly approach in hardness, and at times exceed in value, rubies occur in Nature as distinct crystals, distributed along the beds of rivers and mountain streams, or through certain gravelly layers of earth. The mines of Burmah produce the finest stones, which are obtained by means of circular shafts sunk until the desired stratum is reached. These mines are the property of the king, and are very strictly guarded. The discovery of a stone of unusual size and value is made the occasion of an imposing demonstration, the gem being conveyed to the royal treasury upon the back of an elephant, guarded by a deputation of grandees and a troop of soldiers. And the royal miner has no more excellent title than "King of the Rubies."

The most valuable cut gem, of which we have any knowledge, is an intaglio, classed in the famous Devonshire collection as No. 17. It is a ruby of perfect color and lustre, upon one face of which the figures of a Venus and Cupid are deeply engraved. Analysis has determined the ruby to be a pure oxide of aluminum, which owes its color to the presence of one or two per cent. of oxide of iron; and the fact that its chemical constitution is nearly the same as that of ordinary brick clay, enhances its beauty in the eyes of the student. Replace the oxide of iron by a violet blue pigment, the nature of which is not yet fully determined, and we have the Sapphire — a gem which, being less rare and much more easily imitated, is less highly valued, although the change of color from red to blue increases its beauty in the judgment of many. The sapphire, "like unto the blue of heaven," was one of the twelve gems in the Jewish Breastplate. It was also the gem sacred to Apollo, and was worn by all who consulted the Delphic Oracle. The coloring matter of the sapphire is often confined within a small area of the crystal, as the apex of one or more of its solid angles, the remainder of the stone being clear like the diamond. This feature affords the lapidary an opportunity to display his skill in so adjusting the polished surfaces of the cut stone that the light from the single blue point shall be disseminated throughout the whole — in which case the depth and intensity of its color will vary with the position of the observer. By holding such a stone in a pair of forceps beneath the surface of clear water its true character can be readily detected.

The hardness of the sapphire renders an engraved specimen of extreme value and rarity, the most noteworthy one known being a pale sapphire, nearly an inch in diameter, upon which is engraved a magnificent head of Jupiter. This valuable gem was found deeply set in the hilt of a Turkish dagger, "the intaglio being entirely concealed by the setting," the fortunate Turk into whose hands it fell being evidently of a mind that Art could add little to the beauty which Nature had bestowed upon her handiwork.

In "The Lapidarium" of Marbodus, a descriptive poem of the eleventh century, we find the following mystic virtues ascribed to this gem:

> "Fit only for the hands of kings to wear,
> With purest azure shines the Sapphire rare:
> By Nature with superior honors graced,
> As gem of gems above all others placed;
> Health to preserve and treachery to disarm,
> And guard the wearer from intended harm:
> No envy bends him, and no terror shakes:
> The captive's chains its mighty virtue breaks;
> E'en Heaven is moved, by its force divine,
> To list to vows presented at its shrine.
> Its soothing power contentions fierce controls,
> And in sweet concord binds discordant souls."

The finest sapphires are received from the island of Ceylon, where they are procured by the natives from the river beds, either as single crystals, or in masses cemented with clay and pebbles.

The Ruby, Sapphire, and Topaz, belong to a class of gems known to experts as corundums, and as their commercial value is largely dependent upon the depth and purity of their color, they have all suffered through the freaks of fashion, which, during the Renaissance, placed the sapphire at the end of a list which it now heads. The public taste, which now restores it to its proper rank, has, however, no appreciation for the once prized topaz. This stone, though allied to the others, differs somewhat in chemical constitution, containing at times from 15 to 20 per cent. of Flourine — the effect of which is to lower it in the scale of hardness, and render it more easily changed by heat and chemical action. The finest stones are at present obtained from the mines in Altenburg in Saxony. Those from Brazil are often colorless and of inferior quality, for which reason they receive from the Portuguese the name of "Slave Diamonds." There is a topaz in the Imperial Cabinet at St. Petersburg, eleven inches long by six inches broad, weighing over twenty-two pounds. The ruling color of the topaz is a golden yellow, although those of a delicate pink hue are the most highly prized.

Marbodus, writing at a time when this gem was in great demand, although less was known of its history and properties than now, tells us that —

> "Great is the value, for full rare the stone,
> And but two kinds to eager merchants known;
> One vies with purest gold of orange bright;
> The other glimmers with a fainter light:
> Its yielding nature to the file gives way,
> Yet bids the bubbling caldron cease to play."

At present the colored gem for which there is the greatest demand in the United States, is the Emerald. The finest emeralds are of a dark green color, and vitreous or glassy lustre — the magnificent green being regarded by many as due to the presence of some organic substance; and the fact that at a low heat the stone changes color and becomes opaque, would seem to support this theory.

This beautiful stone has reason to be proud of its ancestry — mention of it being frequent in Holy Writ. Pliny treats of it at length, in his valuable work on precious stones, although his love of the marvelous was evidently in the ascendant when he stated that, on the island of Cyprus, overlooking the sea, there was a sculptured lion, the eyes of which were two emeralds of such exceeding brilliancy that the light from them drove the fish from all the neighboring coast; nor did they return until a royal edict, issued in behalf of the suffering fishermen, caused the dangerous jewels to be removed.

Many strange statements have come down to us, regarding the healing properties of this gem, especially in all diseases of the eye; and there is good authority for believing that the Emperor Nero was accustomed to view the gladiatorial sports through an emerald eye-glass:

> "And thus did Nero, if report be true,
> The mimic warfare of the arena view."

Marvelous stories are also told respecting the size and number of these gems secured by the Spaniards during the conquest of Peru; and that they are not wholly without foundation is evident from the fact that a rapid decline in price followed the return of the conquerors to Spain. We learn from historians that the greater number of these were obtained from the priests of the goddess Esmeralda, who was supposed to make her abode in an emerald of the size and shape of an ostrich egg. Her worshipers were accustomed to offer at her shrine great numbers of these gems, many of which were doubtless destroyed, as were also the diamonds in Brazil, through the mistaken notion that a genuine stone was proof against the blows of a hammer, which severe test, of course, ruined them.

To the conqueror, Cortez, the emerald was a stone of ill-omen, since the gift of a magnificent rose-shaped one, to his bride, so roused the envy of the Spanish Queen as to withdraw from him the favor of her court. A deep green emerald, cut as a brilliant, and encircled with a band of small diamonds, is a jewel at present in great demand; and with good reason, since in no other way is the depth and purity of its color more clearly brought out.

Among the lesser gems the Amethyst holds a prominent place, although it is simply a wine-colored rock-crystal; and its commercial value, like that of the ruby, depends chiefly upon the purity of its tint, to obtain which a pale stone is sometimes set over a layer of red tin-foil. As it is by no means rare, the skill and taste of the lapidary are often put to the test in preparing it for the market. Like the emerald, its beauty is greatly enhanced when contrasted with the diamond; and, as it is of a low order of hardness, diamonds are often set in design upon the polished surface of the stone itself. There is little danger of mistaking the ordinary stone for the Oriental amethyst, which is a rose-colored sapphire — an extremely rare and valuable gem. The color of the amethyst may be deepened by careful heating. The knowledge of this fact is of great service to the lapidary, since it enables him to match these stones the more easily. The Turquois is a stone of the same order, its color being so unstable that the deep blue of the natural gem has been known to change under the heat of the lapidary's wheel to a dull green.

All the above-mentioned gems owe their tint, as we have seen, to the presence of some foreign coloring matter. Not so the many-hued and beautiful Opal, a stone which, though last-mentioned, deserves a place in the front rank. It differs from the others, in that it is opaque, deriving its beauty from the marvelous property it possesses of decomposing the rays of light, and thus reflecting from its polished surface all the colors of the rainbow. It needs, therefore, no brilliant setting, but appears to best advantage when alone. It is at present among the most prized of gems, and has held its place for ages. Marc Antony once offered $850,000 for an opal, the size of a hazel nut; but the owner, Nonius, a Roman Senator, preferred exile to parting with his treasure.

In spite of their value opals are very unsafe investments, for time and exposure dim their lustre, while their sensitiveness to heat is so great that the warmth of the hand has been known to crack them. The finest stones come from mines in Hungary; and among the Austrian crown jewels are gems of greater size and beauty than that which tempted the Roman Emperor. — *W. S. Ward.*

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IT is impossible that anything so natural, so necessary, and so universal as Death, should ever have been designed by Providence as an evil to mankind.

— *Swift.*